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The Fourth International Conference on Numerical Combustion was held on December 2-4, 1991, in St Petersburg, Florida. It was a sequel to the 1989 meeting in Antibes, the 1987 meeting in San Francisco, and the 1985 meeting in Sophia-Antipolis. Six invited lectures were given, by S. Correa (USA), T. Fujiwara (Japan), A. Ghoniem (USA), B. Larrouy (France), M. Smooke (USA), and F. Williams (USA). The overwhelming consensus of the participants was that this was a valuable, high quality meeting, and the pattern of holding such a meeting every two years, alternating between the United States, and Europe should be continued.

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FINAL TECHNICAL REPORT AFOSR-TR-92-0411

Fourth International Conference on Numerical Combustion

December 2-4, 1991
St. Petersburg, Florida

The Fourth International Conference on Numerical Combustion was held on December 2-4, 1991, in St. Petersburg, Florida. It was a sequel to the 1989 meeting in Antibes, the 1987 meeting in San Francisco, and the 1985 meeting in Sophia-Antipolis.

Six invited lectures were given, by S. Correa (USA), T. Fujiwara (Japan), A. Ghoniem (USA), B. Larroutrou (France), M. Smooke (USA), and F. Williams (USA).

A number of minisymposia were organized, some at the behest of the organizing committee, some proposed by the community. A minisymposium is a two-hour time slot donated to a person (typically not on the organizing committee) who defines a program addressing a well defined theme. Typically the program consists of four talks. The following themes were addressed: Simulations Specialized to Reveal Combustion Essentials; Reduced Mechanisms for Combustion Calculations; Japanese Numerical Combustion; Mathematical Modeling of Fires; Computational and Theoretical Approaches to Supersonic Reacting Flows; Numerics and Asymptotics, A Symbiotic Approach to Detonation Physics; Modeling and Simulation of Time-Dependent Combustion Phenomena; Droplet and Spray Analysis; Numerics and Asymptotics, Some Basic Models in High Speed Propulsion; Comparison of Numerical Methods for Detonation Simulations and Turbulent Combustion.

Participants from the U.S., Germany, England, Japan, and France contributed to the minisymposia. The one devoted to detonation simulations, organized by D. Scott Stewart, is of particular notice as it brought together all the major players in the current effort to develop more powerful codes than hitherto used for this problem.

The remainder of the program was devoted to contributed papers, of which there were 21 sessions, with a total of 88 presenters. The subjects covered were: Droplets and Sprays; Ignition; Modeling and Algorithms; Detonations; Multiphase Combustion; Laminar Diffusion Flames; Turbulence; Laminar Premixed Flames; and Supersonic Combustion.

Overall attendance was 178. A goal of this meeting, as in the previous meeting sponsored by SIAM in 1987, was to attract not only the leading computational experts in combustion, but also applied mathematicians engaged in combustion modeling, on the grounds that it is useful to encourage collaboration between these two groups. This goal was achieved. As noted by the Japanese participants especially, the emphasis was on numerical work founded on sound physics -- the scientific approach to large-scale computing -- and it is precisely in defining the nature of these physical ingredients that modelers can play a vital role (e.g. the incorporation of laminar flame sheet concepts into turbulent calculations).

The overwhelming consensus of the participants was that this was a valuable, high quality meeting, and the pattern of holding such a meeting every two years, alternating between the United States and Europe, should be continued.

John Buckmaster
Conference Co-chair

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